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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/982,952	10/22/2001	Derek S. Hilborn	12177/22101	8216
23838	7590	08/18/2005	EXAMINER	
KENYON & KENYON 1500 K STREET NW SUITE 700 WASHINGTON, DC 20005			CHANG, EDITH M	
			ART UNIT	PAPER NUMBER
			2637	

DATE MAILED: 08/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/982,952	<b>Applicant(s)</b> HILBORN ET AL.	
	<b>Examiner</b> Edith M. Chang	<b>Art Unit</b> 2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 28 March 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-17, 19 and 20 is/are rejected.
- 7) ☒ Claim(s) 4 and 18 is/are objected to.
- 8) ☒ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments/Remarks***

1. Applicant's arguments with respect to claims 1-3, 5-11, 13-17 and 19-20 have been considered but are moot in view of the new ground(s) of rejection.

### ***Drawings***

2. The drawings were received on March 28, 2005. These drawings are accepted.

### ***Claim Objections***

3. Claims 1-8, 10-12 and 16-18 are objected to because of the following informalities:

Claim 1, line 7: "period;" should be "period; and".

Claims 2, 10 & 16, line 1: "a signal" should be "the signal".

Claims 3, 11 & 17, line 2: "said filer" should be "said matched filter".

Claim 18, line 1: "The method" should be "The system".

Claims 2 and 4-8 are dependent on the objected claim 1.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 2637

5. Claims 9-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9, line 9: "determining a signal envelope for the received digital signal" does not clearly indicate that this limitation is the same as "determining a signal envelope for a received digital signal" recited in line 6 of this claim, or this limitation merely determining a/another signal envelope for the received signal.

Claims 10-14 are dependent on the rejected claim 9.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-3, 5-11, 13-17 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seki et al. (US 5,602,835) in view of Huang et al. (US 6,058,101).

Seki teaches an apparatus and its method for attaining synchronization in an OFDM digital transmission system in FIG. 1 with the OFDM Modulator 2 and the OFDM Demodulator 7, FIG.5 with the detail of the OFDM Modulator, and ABSTRACT lines 22 to 28.

Regarding **claims 1, 9 & 15**, in FIG.5 the circuit of the receiver device:

receiving a digital signal shown in FIG. 6(a) with guard period and available symbol period from input 31 according to the OFDM modulation (OFDM modulator 2 of FIG.1);

determining the amplitude of the digital signal shown in FIG. 6(c) by the correlators 53 and 54;

filtering the digital envelope by the symbol sync detector 50 using the filtering circuit which is the guard timing detector 55 (details in FIG. 12, comprising square circuit, filter, peak extractor, judging circuit, and flywheel circuit: elements 81 to 87), to provide the guard timing signal shown in FIG. 6(d). As shown in the FIG. 6(c) and FIG. 6(d), the digital signal envelope of FIG. 6(c) is filtered corresponding to the span from the current guard period to the next guard period (e.g. G0 to G1 of FIG. 6(d)), hence the filtering circuit have a span corresponding to the guard period to filter the digital signal envelope of FIG.6 (c);

determining the guard period by guard period remover 41 from the guard timing signal FIG. 6(d) (as the time reference) output from the symbol sync detector 50, based on the digital envelope filtered from the guard timing detector (the filtering circuit) 55.

However, Seki et al. does not explicitly specify the well-known technique of envelope detector to determine a received OFDM signal envelope.

Huang et al. teaches in FIG.3 ('101) the envelope detector 10 detecting/determining the symbols of the OFDM input signal (column 5 lines 36-40). As Seki et al. disclosing the OFDM modulated wave (shown in FIG.2 '835) is difficult to obtain symbol synchronization (column 2, lines 20-25 '835), hence a null symbol period

Art Unit: 2637

has been added (shown in FIG. 3 '835) for symbol synchronization (column 2, lines 32-37 '835) so that the symbol synchronization is obtained from the modulated wave **envelope** (column 2, lines 39-42'835), at the time of the invention, it would have been obvious to one of ordinary skill in the art to have the envelope detector taught by Huang et al. in Seki et al.'s OFDM Demodulator coupled to the A/D (38 & 40 FIG.5 '825) to detect/determine the received modulated wave **envelope** for not only detecting received symbols for guard timing but also providing the amplitude of the signal for filtering (column 5, lines 36-40).

Regarding claims 2, 10 & 16, in FIG.5, Seki teaches A/D 40 sampling the received digital data. To claims 3, 11 & 17, Seki teaches the filtering having a length from the first pulse to the second pulse of the guard timing (shown in FIG. 6(d)) which is approximately equal to the length for the guard period (where is approximately no signal from the end of the down edge of the first triangle pulse to the beginning of the rising edge of the second triangle pulse) of the output from correlator shown in FIG. 6(c).

Regarding claims 5-6, 13-14 & 19-20, Seki teaches the system of FIG. 1 with receiver FIG.5 is the wireless communication system of a mobile system with remote unit using OFDM stated in column 1 lines 14-20.

Regarding claim 7, Seki teaches the digital signal received through the wireless multipass being lower/weaker than the level set for regular (e.g. wireline) service stated in column 1 lines 14-28, wherein the broadcasting or mobile radio signal is prone to the multiple path interference.

Art Unit: 2637

Regarding **claim 8**, Seki teaches the digital transmission system is one of audio or video broadcasting system stated in column 1 lines 14- 17 wherein the broadcasting or mobile radio communication is the audio broadcasting system.

***Allowable Subject Matter***

8. Claims 4 and 18 would be allowable if rewritten to overcome the objection(s) set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

9. Claim 12 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims, and overcome the objection set forth in this Office action.

10. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fails to teach or suggest, alone or in a combination, among other things, at least a method for attaining synchronization as a whole, the combination of elements and features, which includes determining the guard period of the received digital signal including determining the minimum level of the filtered signal envelope provided by a matched filter having a span corresponding to the guard period to indicate the center of the guard period.

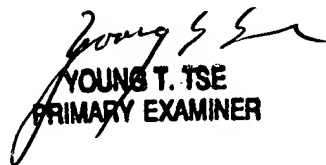
Art Unit: 2637

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M. Chang whose telephone number is 571-272-3041. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay K. Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Edith Chang  
August 8, 2005

  
YOUNG T. TSE  
PRIMARY EXAMINER